7-30-2006

Reflections, Translations, and Rotations

Sandy Zalewski
The College at Brockport

Lesson Plan Template

Name: Sandy Zalewski

Grade level(s)/Subject taught: Math 8

Objectives:

Students will be able to describe and explain what happens to an object after a reflection, translation and a rotation
Students will be able to perform a rotation and a reflection on a figure

Mathematical Concept:

8.R.1 Use physical objects, drawings, chart, tables, graphs, symbols ,equations or objects created using technology as representations
8.R.2 Explain, describe and defend mathematical ideas using representation.
8.G.10 Draw the image of a figure under a translation

Materials:
LCD Projector
Laptops
Powerpoint - Rotations
Warm Up - Rotations Warm Up
Classwork Sheet – Rotations Classwork
Homework – Rotations Homework

Warm Up:
Review of translations – Students will perform a translation of a figure

Launch:
Define rotation
Walk example of a rotation of a triangle using geometer sketchpad

Explore:
In groups of 3 – 4 students will explore idea of a rotations using Geometer Sketchpad
Using the class work sheet they will discover the properties of a rotation around the origin.

Summary:
Student volunteers will share the discoveries about rotations
As a class, I will emphasize that rotated figures are congruent by showing students the measures of the sides and the angles
In addition, we will discuss that the orientation of vertices is preserved in a rotation

This will be the first time my students have used Geometer Sketchpad, so I wanted to make the lesson simple. This lesson is a continuation of our unit on transformations. Up to this point we have looked at reflections and translations. By using this tool students will be able to describe what happens to a figure under a rotation.

The lesson will start with a warm up. The warm up is a review of translations. I have use geometer sketch pad to create the warm and will demonstrate the solution using the LCD projector. This should take 5 -10 minutes.

Next, I will use my PowerPoint to introduce the definition of a rotation. I will then demonstrate how to use the Geometer Sketchpad. I will walk through an example. This should take about 5 – 10 minutes. The class will then be split into groups of 3 or 4 depending on the number of laptops available.

During the explore time, students will follow the class work sheet to focus their investigation. They will start out by performing the given rotation. Then they will be practice creating different figures and performing different rotations. After these rotations they can make some general observations. They will chose one of their diagrams and transfer this to the classwork sheet. During this explore time, I will be walking around to monitor group progress, keep students focused and assess student learning. This should take about 20 minutes.

In the summary, I will ask for students to share their observations. Hopefully, students will have discovered that the rotated figures are the same size and shape. I will reinforce this by showing the measures of the sides and the angles of the original figure and the image used in the example. If no one suggest that the orientation is the same, I will also demonstrate this will the example. This should take about 5 –0 minutes. A homework assignment will be given to further reinforcement the lesson.

Rubric:

Points for Peer Evaluation 0 = 0 1 = 5 2 – 10 3 = 15 4 = 20 (out of 20)	Student has not participated and has been removed from the group. 0 pts.	Student does not participate in group work and has been disruptive or talkative and off task. Student was unable to show an understanding of a rotation and GSP 1 pt.	Student has participated little in group work, but was off task frequently. Student was unable to show an understanding of a rotation and GSP 2 pts.	Student has participated in group work and has cooperated; however, he/she was off task once or twice. Student was able to show an understanding of a rotation and GSP 3 pts.	Student participated in group work and stayed on task until the activity was completed and showed good effort. Student was able to show an understanding of a rotation and GSP 4 pts.
Points for problems on Class Work Assignment 4 questions @ 5 pts. per question, including example (out of 20)	Did not make any attempt to complete class work assignment 0 pts.	Student completed example problem and/or one additional problem on class work assignment. Answers were correct or a correct strategy was clear. 2 pts.	Student completed three problems on class work assignment. Answers were correct or a correct strategy was clear 3 pts.	Student completed all problems on class work assignment. Answers were correct or a correct strategy was clear 3 pts.	